

IN THE CLAIMS

Claim 1. (Currently Amended) A fuel cell output characteristic estimating apparatus for estimating an output characteristic of a fuel cell whose output has undergone a change over ~~which has been used for an extended period of time~~, comprising:

a current-voltage detector that detects an output current of the fuel cell and a voltage between terminals of the fuel cell ~~which has been used for an extended period of time~~; and

a controller that estimates the output characteristic of the fuel cell whose output has undergone a change over ~~which has been used for an extended period of time~~ on the basis of the detected output current and the detected voltage between the terminals, detected by the current-voltage detector, and a predetermined basic output characteristic of the fuel cell.

Claim 2. (Original) A fuel cell output characteristic estimating apparatus according to claim 1, wherein the controller derives the basic output characteristic from at least one of a fuel supply pressure applied to the fuel cell and a temperature of the fuel cell.

Claim 3. (Original) A fuel cell output characteristic estimating apparatus according to claim 2, wherein the controller derives the basic output characteristic from an output characteristic of the fuel cell corresponding to at least one of the fuel supply pressure applied to the fuel cell and the temperature of the fuel cell, and an internal resistance of the fuel cell corresponding to the temperature of the fuel cell.

Claim 4. (Original) A fuel cell output characteristic estimating apparatus according to claim 1, wherein the controller estimates an internal resistance of the fuel cell on the basis of the detected output current, the detected voltage between the terminals, and the basic output characteristic, and estimates the output characteristic of the fuel cell on the basis of the

estimated internal resistance of the fuel cell.

Claim 5. (Original) A fuel cell output characteristic estimating apparatus according to claim 2, wherein the controller estimates an internal resistance of the fuel cell on the basis of the detected output current, the detected voltage between the terminals, and the basic output characteristic, and estimates the output characteristic of the fuel cell on the basis of the estimated internal resistance of the fuel cell.

Claim 6. (Original) A fuel cell output characteristic estimating apparatus according to claim 3, wherein the controller estimates the internal resistance of the fuel cell on the basis of the detected output current, the detected voltage between the terminals, and the basic output characteristic, and estimates the output characteristic of the fuel cell on the basis of the estimated internal resistance of the fuel cell.

Claim 7. (Original) A fuel cell output characteristic estimating apparatus according to claim 6, wherein the controller estimates the output characteristic of the fuel cell on the basis of the output characteristic corresponding to at least one of the fuel supply pressure applied to the fuel cell and the temperature of the fuel cell, and the estimated internal resistance.

Claim 8. (Currently Amended) A fuel cell system having a fuel cell whose output has undergone a change over ~~which has been used for an extended period of time~~, the fuel cell system comprising:

a fuel cell output characteristic estimating apparatus for estimating an output characteristic of the fuel cell whose output has undergone a change over ~~which has been used for an extended period of time~~, including a current-voltage detector that detects an output

current of the fuel cell and a voltage between terminals of the fuel cell, and a controller that:

estimates the output characteristic of the fuel cell whose output has undergone a change over on the basis of the detected output current and the detected voltage between the terminals, detected by the current-voltage detector, and a predetermined basic output characteristic of the fuel cell;

sets a target output of the fuel cell using the output characteristic of the fuel cell estimated by the controller; and

adjusts an output of the fuel cell such that the set target output is generated by the fuel cell.

Claim 9. (Original) A fuel cell system according to claim 8, further comprising:
a power supply that supplies electric power to and receives the electric power from the fuel cell system, wherein:

the controller sets the target output of the fuel cell on the basis of an output required to be generated by the fuel cell system; and

when the set target output of the fuel cell is in excess of or short of the required output of the fuel cell system, the controller changes supply of the electric power to or from the power supply.

Claim 10. (Original) A fuel cell system according to claim 9, wherein the controller includes a transformer that is connected to terminals of the power supply and transforms the voltage between the terminals of the power supply so as to be applied to output terminals of the fuel cell.

Claim 11. (Original) A fuel cell system according to claim 8, wherein the controller

changes the voltage between the terminals of the fuel cell into a voltage corresponding to the set target output.

Claim 12. (Original) A fuel cell system according to claim 9, wherein the controller changes the voltage between the terminals of the fuel cell into a voltage corresponding to the set target output.

Claim 13. (Original) A fuel cell system according to claim 10, wherein the controller changes the voltage between the terminals of the fuel cell into a voltage corresponding to the set target output.

Claims 14-39. (Cancelled).

Claim 40. (Previously Presented) A fuel cell output characteristic estimating apparatus for estimating an output characteristic of a fuel cell, comprising:

a current-voltage detector that detects an output current of the fuel cell and a voltage between terminals of the fuel cell; and

a controller that estimates the output characteristic of the fuel cell on the basis of the detected output current and the detected voltage between the terminals, detected by the current-voltage detector, and a predetermined basic output characteristic of the fuel cell, wherein the predetermined basic output characteristic is a function of an internal resistance of the fuel cell.

Claim 41 (Previously Presented) A fuel cell system having a fuel cell, the fuel cell system comprising:

a fuel cell output characteristic estimating apparatus for estimating an output characteristic of the fuel cell, including a current-voltage detector that detects an output current of the fuel cell and a voltage between terminals of the fuel cell, and a controller that:

estimates the output characteristic of the fuel cell on the basis of the detected output current and the detected voltage between the terminals, detected by the current-voltage detector, and a predetermined basic output characteristic of the fuel cell, wherein the predetermined basic output characteristic is a function of an internal resistance of the fuel cell;

sets a target output of the fuel cell using the output characteristic of the fuel cell estimated by the controller; and

adjusts an output of the fuel cell such that the set target output is generated by the fuel cell.

Claim 42. (Cancelled).